SMX System MultiMatrix

MODULAR MULTI-PLANE MATRIX SWITCHER

Truly modular, field-configurable
matrix switching system

➤ Field reconfigurable and updateable
card cage frame design

➤ Choice of matrix cards in most
common signal types and
I/O sizes:

– Composite Video
– S-Video
– HD-SDI
– VGA
– Wideband RGB
– Stereo Audio

➤ RS-232 and IP Link® control

Extron® Electronics

www.extron.com

Introduction

The **SMX System MultiMatrix** Series of multi-plane matrix switchers combines multiple, independent analog and digital matrix switchers in a truly modular, field-configurable frame. It supports up to 16 independent matrix switchers, all under a single point of control. The SMX combines the proven reliability and high performance of Extron's popular CrossPoint 300, MAV Plus, HDXP Plus, and MVX Series matrix switchers with the efficiency of a modular matrix switcher design. The SMX System is an ideal choice for medical imaging systems, conference and training facilities, and other mid-sized applications that require the switching of different signal types, a small footprint, and a cost-effective upgrade path for ongoing I/O or signal format changes.

The heart of the SMX System MultiMatrix is a field re-configurable frame designed to facilitate the installation of new and replacement matrix switcher boards with a minimum 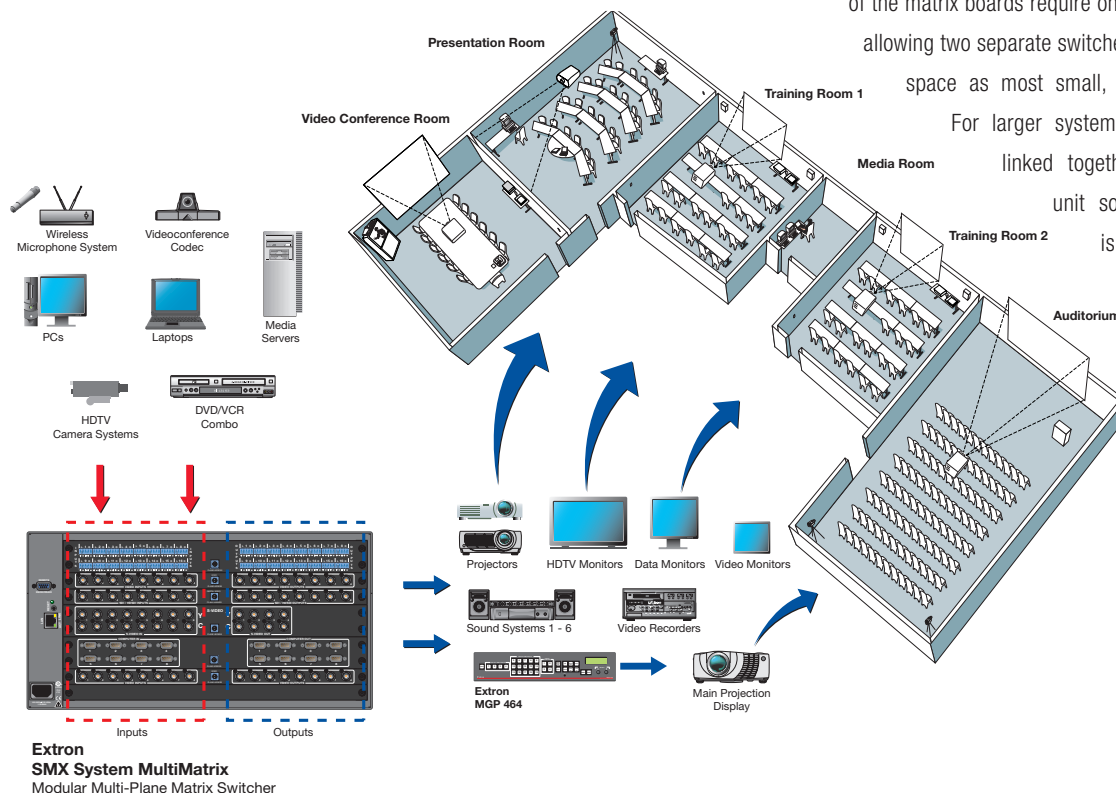of time and labor. The unique, hot-swappable card-cage design quickly aligns each matrix board on its own horizontal plane. Matrix boards can be installed without switcher disassembly, new firmware, or even the need to remove a previously-installed SMX switcher from the rack.

Three frames, available in 3U, 4U, and 5U sizes, provide six, eight, or ten slots, respectively. Simply select the combination of analog, wideband, digital, and stereo audio matrix boards that best fit the application, and then install them, in any order, in one or more frames. As A/V signal routing needs change over time, choose new matrix boards to adapt the SMX to the new requirements.

In a conference center application, such as the one depicted below, A/V signal routing can require five or more separate matrix switchers - each with its own control panel and power supply. In addition to a large, complex A/V equipment rack, such a system design also requires a very complex control system, with a separate control port for each matrix switcher.

With the SMX System MultiMatrix, these same, varied signal routing tasks can be consolidated, with one control point for the entire A/V signal routing system. The SMX System MultiMatrix also requires significantly less rack space. Many of the matrix boards require only one-half unit of rack space, allowing two separate switchers to be mounted in the same space as most small, standalone matrix switchers. For larger systems, additional frames can be linked together, still acting as a single unit so far as the control system is concerned.

Wireless Microphone System

Videoconference Codec

PCs

Laptops

Media Servers

HDTV Camera Systems

DVD/VCR Combo

Presentation Room

Video Conference Room

Training Room 1

Media Room

Training Room 2

Auditorium

Projectors

HDTV Monitors

Data Monitors

Video Monitors

Sound Systems 1 - 6

Video Recorders

Extron MGP 464

Main Projection Display

Inputs

Outputs

Extron
SMX System MultiMatrix
Modular Multi-Plane Matrix Switcher

Overview

Single Point of Control
Select any of up to 16 separate switchers from the front control panel, RS-232, or IP Link

Back-lit input/output selection buttons
I/O selection and crosspoint ties are easily identifiable using back-lit buttons with clear overlay labels, enabling simple front panel operation

Configuration Port
The SMX MultiMatrix can be conveniently set up and configured after installation, using the front panel serial configuration port
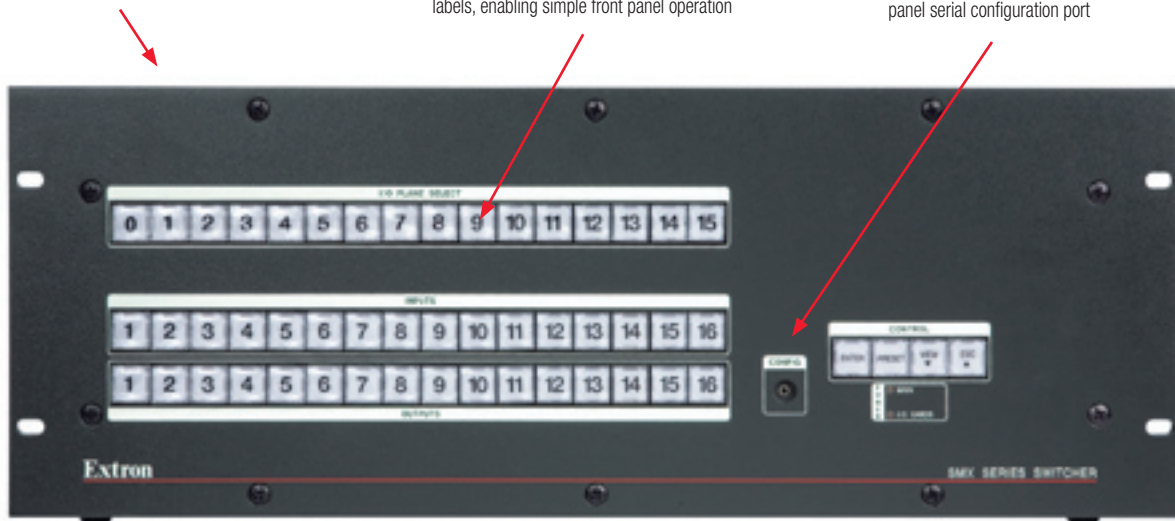
IPLINK®

IP Link Ethernet control enables the SMX to be managed and proactively monitored from any authorized Web client

Hot-Swappable Back Plane
Matrix boards can be installed or removed at any time without disrupting other switcher planes

Truly Modular and Field-Configurable
Modular, multi-plane chassis design supports multiple, independent switchers in any configuration

Easy, Flexible System Expansion
Link two or three frames via Ethernet to support larger-scale, multiple switcher applications

SMX 300 - 3U/6 Slot

SMX 400 - 4U/8 Slot

SMX 500 - 5U/10 Slot

Matrix Board Removal and Replacement

The SMX System MultiMatrix combines multiple, independent analog and digital matrix switchers in a modular, field-configurable frame system. Matrix boards are hot-swappable and can be installed, removed, or replaced in 5 easy steps, without disrupting the operation of other switcher planes.

Step 1

For new installations: Loosen the screws retaining the cover plate over the slot(s) that will receive the new matrix switcher board. Remove the cover plate.

To remove a previously-installed matrix board: Disconnect the cables from the board. Loosen the screws retaining the matrix board and remove it from the frame.

Step 2

Slide in the new matrix board. Make sure that the new board is fully seated. Tighten the screws just until snug against the plate.

Step 3

Set the rotary switch, located in the center of the matrix board, to the number reflecting the slot in which the new matrix board has been installed.

Note: For RGBHV systems, set the rotary switch to the same slot number for each board. This will allow the boards to switch as a single switcher.

Step 4

Connect the input and output cables.

Step 5

Reinitialize the SMX frame. It will be necessary to power cycle the frame in order for the internal controller to auto-recognize the newly installed matrix board.
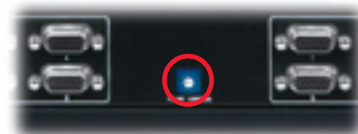
Note: Reinitializing the SMX MultiMatrix will momentarily disrupt the operation of the matrix switcher and other switcher planes. This procedure can be performed at any time.

Step 1

Step 2

Step 3
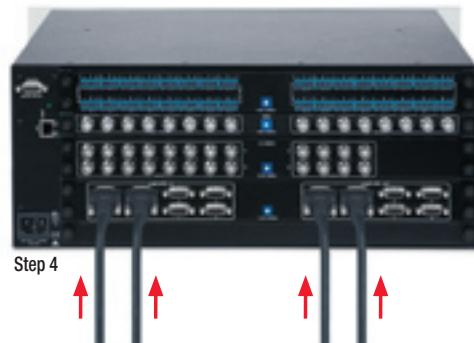
Step 4

Step 5

Applications

Emergency Operations Centers

Emergency and mobile operations centers present challenging signal routing scenarios. On the front lines of first-responder support and acting as communication hubs for various public service authorities, emergency operations centers require immediate access to a variety of video and audio signal types, including TV feeds, map systems, communications computers, and many other sources.

The SMX System MultiMatrix, with its highly customizable, field-re-configurable design, allows matrix boards to be added or changed as new signal types are introduced or I/O requirements change. Rack space is optimized as well, with one SMX frame often accommodating all the switching needs of a mid-sized facility or a mobile unit. A single, intuitive control interface speeds time to operation and signal routing, critical in a fast-paced environment where every second counts.

Emergency Operations Center

Medical Applications

Medical professionals rely heavily on state-of-the-art A/V for monitoring vital signs, viewing MRIs, and for routing signals to remote rooms for diagnostic or teaching purposes. Surgical cameras, computers, and patient monitors output a variety of signal types including digital video, wideband, RGB, and composite video. In these environments, A/V rack space is limited and A/V equipment is upgraded frequently to keep pace with medical technologies.

The SMX System MultiMatrix serves the switching needs of operating suites and clinical rooms, and accommodates field upgrades while requiring less than half the rack space of a typical, multiple matrix switching system. Matrix boards are available in a variety of popular I/O sizes for most common analog and digital signal types. The boards are hot-swappable and can be easily removed or replaced without disrupting the operation of other boards in the system, reducing both operational cost and downtime in high-utilization environments.

Medical Imaging Observation Suite

SMX Matrix Boards

Matrix switcher boards are available to support a wide variety of video and audio signal formats. The SMX System MultiMatrix supports up to 16 independent matrix switchers, all under a single point of control.

Signal Type	Description	I/O Size		
Composite Video	**Composite Video Matrix Switcher Boards** • 150 MHz (-3 dB) video bandwidth, fully loaded • NTSC, PAL, and SECAM compatible • Video input signal detection • Vertical interval switching and genlock	**Model** SMX 84 V SMX 88 V SMX 1616 V	**Version** 8x4 composite video 8x8 composite video 16x16 composite video	**Part#** 70-591-02 70-591-03 70-591-04
S-video	**S-video Matrix Switcher Boards** • 150 MHz (-3 dB) video bandwidth, fully loaded • NTSC, PAL, and SECAM compatible • Video input signal detection	**Model** SMX 84 SV SMX 88 SV SMX 1616 SV	**Version** 8x4 S-video (DIN) 8x8 S-video (DIN) 16x16 S-video (DIN)	**Part#** 70-592-02 70-592-03 70-592-04
S-video	**S-video (Y/C) Matrix Switcher Boards** • 150 MHz (-3 dB) video bandwidth, fully loaded • NTSC, PAL, and SECAM compatible • Video input signal detection	**Model** SMX 84 YC SMX 88 YC SMX 1616 YC	**Version** 8x4 S-video (2 BNC) 8x8 S-video (2 BNC) 16x16 S-video (2 BNC)	**Part#** 70-593-02 70-593-03 70-593-04
Ultra-Wideband Video	**Wideband Matrix Switcher Boards** • 350 MHz (-3 dB) RGB video bandwidth • Triple Action Switching™ for RGB Delay	**Model** SMX 84 WB SMX 88 WB SMX 1616 WB	**Version** 8x4 wideband (BNC) 8x8 wideband (BNC) 16x16 wideband (BNC)	**Part#** 70-594-02 70-594-03 70-594-04
Sync	**Sync Matrix Switcher Boards** • Designed for RGBHV matrix switching applications • ADSP™ Advanced Digital Sync Processing technology • DSVP™ Digital Sync Validation Processing	**Model** SMX 88 SYNC SMX 1616 SYNC SMX 88 H+V	**Version** 8x8 Single-channel sync 16x16 Single-channel sync 8x8 H+V sync	**Part#** 70-595-03 70-595-04 70-595-05
VGA	**Wideband VGA Matrix Switcher Boards** • 300 MHz (-3 dB) RGB video bandwidth • Triple Action Switching™ for RGB delay • ADSP™ Advanced Digital Sync Processing technology • DSVP™ Digital Sync Validation Processing	**Model** SMX 84 VGA SMX 88 VGA SMX 1616 VGA	**Version** 8x4 wideband (15-pin HD) 8x8 wideband (15-pin HD) 16x16 wideband (15-pin HD)	**Part#** 70-596-02 70-596-03 70-596-04
HD-SDI	**Multi-Rate Serial Digital Matrix Switcher Boards** • Complies with all SMPTE and ITU standards for Serial Digital video • Supports data rates from 19 Mbps to 2.97 Gbps • Input equalization to 300 feet or more • User-selectable reclocking	**Model** SMX 84 HD-SDI SMX 88 HD-SDI SMX 1616 HD-SDI	**Version** 8x4 multi-rate SDI 8x8 multi-rate SDI 16x16 multi-rate SDI	**Part#** 70-597-02 70-597-03 70-597-04
Stereo Audio	**Stereo Audio Matrix Switcher Boards** • Switches balanced or unbalanced stereo audio signals • Audio input gain and attenuation • Audio output volume adjustment and muting • Audio breakaway	**Model** SMX 84 A SMX 88 A SMX 1616 A	**Version** 8x4 stereo audio 8x8 stereo audio 16x16 stereo audio	**Part#** 70-599-02 70-599-03 70-599-04

Specifications

VIDEO — COMPOSITE VIDEO (SMX 84/88/1616 V)

Routing
- SMX 84 V .... 8 x 4 matrix
- SMX 88 V .... 8 x 8 matrix
- SMX 1616 V .... 16 x 16 matrix

Gain .... Unity
Bandwidth .... 150 MHz (-3 dB), fully loaded
Differential phase error .... 1.0º at 3.58 MHz and 4.43 MHz
Differential gain error .... 1.0% at 3.58 MHz and 4.43 MHz
Crosstalk .... -50 dB @ 5 MHz
Switching speed .... 100 ms (max.)

VIDEO INPUT — COMPOSITE VIDEO (SMX 84/88/1616 V)

Number/signal type .... 8 or 16 composite video
Connectors .... 8 or 16 female BNC
Nominal level .... 1 Vp-p for composite video
Minimum/maximum levels .... Analog: 0.5 V to 2.0 Vp-p with no offset
Impedance .... 75 ohms
Return loss .... <-30 dB @ 5 MHz
DC offset (max. allowable) .... 1.5 V

VIDEO OUTPUT — COMPOSITE VIDEO (SMX 84/88/1616 V)

Number/signal type .... 4, 8, or 16 composite video
Connectors .... 4, 8, or 16 BNC female
Nominal level .... 1 Vp-p for composite video
Minimum/maximum levels .... 0.0 V to 2.0 Vp-p (follows input)
Impedance .... 75 ohms
Return loss .... -30 dB @ 5 MHz
DC offset .... ±5 mV with input at 0 offset

SYNC — COMPOSITE VIDEO (SMX 84/88/1616 V)

Standards .... NTSC 3.58, NTSC 4.43, PAL, SECAM

VIDEO — S-VIDEO (SMX 84/88/1616 SV, SMX 84/88/1616 YC)

Routing
- SMX 84 SV/YC .... 8 x 4 matrix
- SMX 88 SV/YC .... 8 x 8 matrix
- SMX 1616 SV/YC .... 16 x 16 matrix

Gain .... Unity
Bandwidth .... 150 MHz (-3 dB), fully loaded
Differential phase error .... 1.0º at 3.58 MHz and 4.43 MHz
Differential gain error .... 1.0% at 3.58 MHz and 4.43 MHz
Crosstalk .... -50 dB @ 5 MHz
Switching speed .... 100 ms (max.)

VIDEO INPUT — S-VIDEO (SMX 84/88/1616 SV, SMX 84/88/1616 YC)

Number/signal type .... 8 or 16 S-video
Connectors
- SMX 84/88/1616 SV .... 8 or 16 female 4-pin mini DIN
- SMX 84/88/1616 YC .... 8 or 16 x 2 female BNC

Nominal level .... 1 Vp-p for Y S-video 0.3 Vp-p for C of S-video
Minimum/maximum levels .... Analog: 0.5 V to 2.0 Vp-p with no offset
Impedance .... 75 ohms
Return loss .... <-30 dB @ 5 MHz
DC offset (max. allowable) .... 1.5 V

VIDEO OUTPUT — S-VIDEO (SMX 84/88/1616 SV, SMX 84/88/1616 YC)

Number/signal type .... 4, 8, or 16 S-video
Connectors
- SMX 84/88/1616 SV .... 4, 8, or 16 female 4-pin mini DIN
- SMX 84/88/1616 YC .... 4, 8, or 16 x 2 female BNC

Nominal level .... 1 Vp-p for Y S-video
 0.3 Vp-p for C of S-video
Minimum/maximum levels .... 0.0 V to 2.0 Vp-p (follows input)
Impedance .... 75 ohms
Return loss .... -30 dB @ 5 MHz
DC offset .... ±5 mV with input at 0 offset

SYNC — S-VIDEO (SMX 84/88/1616 SV, SMX 84/88/1616 YC)

Standards .... NTSC 3.58, NTSC 4.43, PAL, SECAM

VIDEO — ULTRA-WIDEBAND (SMX 84/88/1616 WB)

Routing
- SMX 84 WB .... 8 x 4 matrix
- SMX 88 WB .... 8 x 8 matrix
- SMX 1616 WB .... 16 x 16 matrix

Gain .... Unity
Bandwidth .... 350 MHz (-3 dB), fully loaded
Crosstalk .... -80 dB @ 1 MHz, -55 dB @ 10 MHz, -45 dB @ 30 MHz, -37 dB @ 100 MHz
Switching speed .... 200 ms (max.)

VIDEO INPUT — ULTRA-WIDEBAND (SMX 84/88/1616 WB)

Number/signal type .... 8 or 16 VGA-QXGA RGBHV, RGBS, RGsB, RsGsB
Connectors .... 8 or 16 x 4 female BNC
Nominal level .... 0.7 Vp-p for RGB
Minimum/maximum levels .... Analog: 0.3 V to 1.5 Vp-p with no offset
Impedance .... 75 ohms
Horizontal frequency .... 15 kHz to 150 kHz
Vertical frequency .... 30 Hz to 150 Hz
Return loss .... <-30 dB @ 5 MHz
DC offset (max. allowable) .... 1.5 V

VIDEO OUTPUT — ULTRA-WIDEBAND (SMX 84/88/1616 WB)

Number/signal type .... 4, 8, or 16 VGA-QXGA RGBHV, RGBS, RGsB, RsGsB
Connectors .... 4, 8, or 16 x 4 female BNC
Nominal level .... 0.7 Vp-p for RGB
Minimum/maximum levels .... 0 V to 2.0 Vp-p (follows input)
Impedance .... 75 ohms
Return loss .... <-30 dB @ 5 MHz
DC offset .... ±5 mV with input at 0 offset
Switching type .... Triple-Action

SYNC — SMX 88 SYNC, SMX 88 H+V, SMX 1616 SYNC

Input type
- SMX 88 SYNC, SMX 1616 SYNC .... Composite sync (S)
- SMX 88 H+V .... Separate H and V sync

Output type (follows input)
- SMX 88 SYNC, SMX 1616 SYNC .... Composite sync (S)
- SMX 88 H+V .... Separate H and V sync

Input level .... 0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level .... AGC to TTL: 4.0 V to 5.0 V p-p, unterminated
Input impedance .... 510 ohms
Output impedance .... 75 ohms
Horizontal frequency .... 15 kHz to 150 kHz
Vertical frequency .... 30 Hz to 150 Hz
Max. propagation delay .... 30 ns
Max. rise/fall time .... 4 ns
Polarity .... Positive or negative (follows input)

VIDEO — VGA (SMX 84/88/1616 VGA)

Routing
- SMX 84 VGA .... 8 x 4 matrix
- SMX 88 VGA .... 8 x 8 matrix
- SMX 1616 VGA .... 16 x 16 matrix

Gain .... Unity
Bandwidth .... 300 MHz (-3 dB), fully loaded
Crosstalk .... -55 dB @ 10 MHz
Switching speed .... 200 ms (max.)

VIDEO INPUT — VGA (SMX 84/88/1616 VGA)

Number/signal type .... 8 or 16 VGA-QXGA RGBHV, RGBS, RGsB, RsGsB
Connectors .... 8 or 16 female 15-pin HD
Nominal level .... 0.7 Vp-p for RGB
Minimum/maximum levels .... Analog: 0.3 V to 1.5 Vp-p with no offset
Impedance .... 75 ohms
Horizontal frequency .... 15 kHz to 150 kHz
Vertical frequency .... 30 Hz to 150 Hz
Return loss .... <-30 dB @ 5 MHz
DC offset (max. allowable) .... 1.5 V

VIDEO OUTPUT — VGA (SMX 84/88/1616 VGA)

Number/signal type .... 4, 8, or 16 VGA-QXGA RGBHV, RGBS, RGsB, RsGsB
Connectors .... 4, 8, or 16 female 15-pin HD
Nominal level .... 0.7 Vp-p for RGB
Minimum/maximum levels .... 0 V to 2.0 Vp-p (follows input)
Impedance .... 75 ohms
Return loss .... <-30 dB @ 5 MHz
DC offset .... ±5 mV with input at 0 offset
Switching type .... Triple-Action

Specifications

SYNC — VGA (SMX 84/88/1616 VGA)

Input type... RGBHV, RGBS, RGsB, RsGsBs
Output type .... RGBHV, RGBS, RGsB, RsGsBs (follows input)
Input level .... 0.5 V to 5.0 Vp-p, 4.0 Vp-p normal
Output level .... AGC to TTL: 4.0 V to 5.0 V p-p, unterminated
Input impedance .... 510 ohms
Output impedance .... 75 ohms
Horizontal frequency .... 15 kHz to 150 kHz
Vertical frequency .... 30 Hz to 150 Hz
Max. propagation delay .... 30 ns
Max. rise/fall time .... 4 ns
Polarity .... Positive or negative (follows input)

VIDEO — SMX 84/88/1616 SDI

Routing
  SMX 84 HD-SDI... 8 x 4 matrix
  SMX 88 HD-SDI... 8 x 8 matrix
  SMX 1616 HD-SDI....................................... 16 x 16 matrix
Gain... Unity
Maximum data rate.. 2.97 Gbps
Data types.. 8 or 10 bit
Operation standards .... SMPTE 259M, SMPTE 292M, SMPTE 424M, ITU R BT.601, ITU R BT.1120

VIDEO INPUT — SMX 84/88/1616 SDI

Number/signal type... 8 or 16 single link SDI, HD-SDI; or dual link HD-SDI
Connectors .... 8 or 16 BNC female
Nominal level.. 0.80 Vp-p ± 10%
Impedance .... 75 ohms
Return loss .... <-15 dB @ 1 MHz to 1.5 GHz
Equalization.. Automatic
Input cable equalization distance
  HDSDI
    Extron SHR, Belden 1694A cable .... 492' (150 m)
    Extron HR, Belden 1505A cable .... 328' (100 m)
  SDI
    Extron SHR, Belden 1694A cable .... 984' (300 m)
    Extron HR, Belden 1505A cable .... 656' (200 m)
NOTE: The transmission distance varies depending on the signal resolution and on the type of cable, graphic card, and display used in the system.

VIDEO OUTPUT — SMX 84/88/1616 SDI

Number/signal type... 4, 8, or 16 single link SDI, HD-SDI; or dual link HD-SDI
Connectors .... 4, 8, or 16 BNC female
Nominal level.. 0.80 Vp-p ± 10%
Impedance .... 75 ohms
Return loss .... <-15 dB @ 1 MHz to 1.5 GHz
DC offset .... ±0.5 V with input at 0 offset
Reclocking .... Automatic, or use available bypass mode for nonstandard rates
Jitter... <0.2 VI
Rise/fall time (20-80%)
  SDI .... 700 ps ±100 ps
  HD-SDI .... 250 ps ±100 ps

AUDIO — SMX 84/88/1616 A (ANALOG)

Routing
  SMX 84 A.. 8 x 4 stereo matrix
  SMX 88 A.. 8 x 8 stereo matrix
  SMX 1616 A... 16 x 16 stereo matrix
Gain... Unbalanced output: -6 dB; balanced output 0 dB
Frequency response .... 20 Hz to 20 kHz, ±0.05 dB
THD + Noise .... 0.03% @ 1 kHz, 0.3% @ 20 kHz at nominal level
S/N .... >90 dB at maximum output (21 dBu, unweighted) (balanced)
Crosstalk .... <-80 dB @ 1 kHz, fully loaded
Stereo channel separation .... >80 dB @ 1 kHz
CMRR .... >75 dB @ 20 Hz to 20 kHz

AUDIO INPUT — SMX 84/88/1616 A (ANALOG)

Number/signal type... 8 or 16 stereo, balanced/unbalanced
Connectors .... (8 or 16) _._ mm captive screw connector, 5 pole
Impedance .... >10k ohms unbalanced/balanced, DC coupled
Nominal level.. 0 dBu (0.775 Vrms)
Maximum level .... +19.5 dBu, (balanced or unbalanced) at 1% THD+N
Input gain adjustment .... −18 dB to +24 dB, adjustable per input; default = 0 dB
NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT — SMX 84/88/1616 A (ANALOG)

Number/signal type .... 8 or 16 stereo, balanced/unbalanced
Connectors .... (8 or 16) 3.5 mm captive screw connector, 5 pole
Impedance .... 50 ohms unbalanced, 100 ohms balanced
Gain error .... ±0.1 dB channel to channel
Maximum level (Hi-Z) .... >+21 dBu, balanced or unbalanced at 0.1% THD+N
Maximum level (600 ohm) .... >+15 dBm, balanced or unbalanced at 0.1% THD+N
Volume control range.. -85 dB to 0 dB (volume numbers 0 through 64) in a 35 dB increment from step 0 to step 1, then in 1 dB increments from steps 1 to 64; default = 64 (0 dB)
NOTE: Attenuation = volume number minus 64. The default is 0 dB = volume number 64.

CONTROL/REMOTE — SWITCHER HOST PORTS

Serial host control port .... 1 bidirectional RS-232 or RS-422, rear panel 9-pin female D connector
    1 bidirectional RS-232 front panel 2.5 mm mini stereo jack
Baud rate and protocol...................................... 9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity
Serial control pin configurations
  9-pin female D connector
    RS 232 .... 2 = TX, 3 = RX, 5 = GND
    RS 422 .... 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+
Mini stereo jack
  RS-232 .... Tip = TX, ring = RX, sleeve = GND
Ethernet control port .... 1 RJ-45 female
Ethernet data rate (for network communication)... 10/100Base-T, half/full duplex with autodetect
Ethernet protocol .... ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP, SMTP
Ethernet default settings .... Link speed and duplex level = autodetected
    IP address = 192.168.254.254, subnet mask = 255.255.0.0, default gateway = 0.0.0.0 DHCP = off
Web server... Up to 200 simultaneous sessions
    2 MB nonvolatile user memory
Program control... Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer ver. 6 or higher, Telnet

GENERAL

Power .... 100 VAC to 240 VAC, 50/60 Hz, 200 watts, internal
Cooling .... Forced air, left to right (as viewed from front panel)
Rack mount.. Yes
Enclosure type .... Metal
Enclosure dimensions (Depth excludes connectors. Width excludes rack ears.)
  SMX 300 Frame .... 5.25" H x 17.0" W x 12" D (3U high, full rack wide) 13.3 cm H x 43.2 cm W x 30.5 cm D
  SMX 400 Frame .... 7.0" H x 17.0" W x 12" D (4U high, full rack wide) 17.8 cm H x 43.2 cm W x 30.5 cm D
  SMX 500 Frame .... 8.75" H x 17.0" W x 12" D (5U high, full rack wide) 22.2 cm H x 43.2 cm W x 30.5 cm D
Product weight .... TBD
Shipping weight... TBD
DIM weight... TBD
Listings... UL, CUL
Compliances .... CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF.. 30,000 hours
Warranty .... 3 years parts and labor
NOTE: All nominal levels are at ±10%.

Model	Version Description	Part number
SMX 300 Frame	3U/6-slot frame	60-855-01
SMX 400 Frame	4U/8-slot frame	60-856-01
SMX 500 Frame	5U/10-slot frame	60-857-01

Specifications are subject to change without notice.